

Wednesday, March 26, 2003

Quino Model Construction Metadata

Notes started: 06/03/2002

Model Parameterization:

- A. Exclude lands outside of 2002 USFWS Quino survey area
- B. Exclude areas for which the County is not seeking coverage (e.g., water district lands—County to identify areas to be excluded, if any)
- C. Code as 'Unsuitable' that clearly have no potential to support Quino, based on habitat type. Helix reviewed areas coded as unsuitable against a current aerial photo to verify that they were appropriately excluded. Habitat types that will be considered to have the potential to support Quino are limited to the following:
 - 1. Coastal sage scrub
 - 2. Maritime succulent scrub
 - 3. Chaparral
 - 4. Coastal sage scrub/chaparral ecotone
 - 5. Grassland
 - 6. Vernal pools
- D. Categorize remaining areas based on 2001 survey results (if any), and distance from known Quino locations (*any recent observations, not limited to 2001 – more on this later). Categories A through C represent low to high potential to support Quino (see next page).

MSCP Preserve Categories -

- Category (1) A:** Inside 0.6 mile of known Quino location
(Note that these areas may be expanded later to include linkage areas and additional reserve lands around San Vicente Reservoir)
- Category (2) B:** No 2001 protocol survey and outside 0.6 mile of known Quino location
- Category (3) C:** Negative 2001 protocol survey and outside 0.6 mile of known Quino location

Non MSCP Preserve Categories – (this protocol was modified on 2/28/2003 – see below)

- Category (4) A:** Non MSCP Preserve - Inside 0.6 mile of known Quino location
(Note that these areas may be expanded later to include linkage areas and additional reserve lands around San Vicente Reservoir).
- Category (5) B:** No 2001 protocol survey and outside 0.6 mile of known Quino location.
- Category (6) C:** Negative 2001 protocol survey and outside 0.6 mile of known Quino location **AND areas not considered as viable habitat for the QCB because of there distance or fragmentation.**
- Category (7) :** **OSP not recognized as viable habitat for the QCB** (see step 8 – model revision step 4 for full definition).

- E. Produce maps of results (a map of each should be made for the entire MSCP area, then one of each at a larger scale that focuses on the areas where Quino occur)
1. Habitat suitability: known Quino locations (coded to reflect number of individuals), habitat suitability categories (A,B,C and Unsuitable), 2002 survey area boundary and any lands excluded under item B
 2. Anticipated impacts: above information, plus the conservation/impact status of the property (could be multiple categories, such as take authorized areas, major/minor amendment areas, no take authorized, etc.—County should determine which categories it wishes to use)

F. Produce tabulations of results (all tabulations should be run for both entire MSCP area and by subarea)

1. Existing conditions:

- acreage excluded under items A&B (separately)
- acreage in each habitat suitability category (including unsuitable)
- total number of Quino observed in 2001

2. Anticipated impacts/conservation:

- acreage in each suitability category for each impact/conservation category (see E.2)
- total number of Quino observed in 2001 for each impact/conservation category

Input GIS layers used to create QCB Model:

/gp/bio/veg95 – AI Cover poly - Holland code mapped vegetation for San Diego county

/gp/bio/vpcomplex – AI Cover poly - vernal pools aggregation areas including surround habitat

/gp/bio/vp – AI Cover poly - individual vernal pools

/gp/bio/nddb - AI Cover point – California Natural Diversity Database point natural history observations

/projects/mscp/projects – AI Cover polygon – Accounting of the projects in the MSCP gain and loss.

/projects/mscp/pama – AI Cover polygon – The official preapproved mitigation area Cover - A.K.A the **PAMA** layer.

/apps/regional/species/butterfly/usfws_2001/qcb_pts.shp (USFWS sensitive - do not distribute) – points – centroid observations of the current (as of may 2002) Quino data.

/apps/regional/species/USFWS_CFWO_DATA/cfw250_08stp USFWS regions composite cover that details the generalized (based upon precision) positions of sensitive species observations.

/projects/quino_mscp_package/1km_buffer.shp – polygon – 1 kilometer buffer of qcb_pts that range in age from 1992 to 2002

/projects/mscp/segments – AI cover polygon – segments of the mscp boundary (gary's new layer)

/apps/regional/species/quino_butterfly/qcb_sur2000 – AI Cover polygon presence or absence of in the survey locations of 1999, 2000, and 2001

GIS Methodology:

Step 1: Reselected the vegetation from veg95 –

reselect: 32500 Diegan Coastal sage scrub

aselect: 32400 Maritime succulent scrub

aselect: 37000 Chaparral (or any community possessing the 37*** prefix)

aselect: 42000 Grasslands (or any community possessing the 42*** prefix)

output stored in **/projects/quino_mscp_package/veg_export.shp**

Step 2: Compile vernal pool layer –

Reselect: vernal pool points from CNDDDB layer

Buffer: vernal pool points to 10 meters

Merge: combine output with the **vpcomplex** layer

Output stored in **/projects/quino_mscp_package/vernal_pool_merged**

Step 3: Convert the [**vernal_pool_merged**] and [**veg_export**] to an AI covers. Union the [**vernal_pool_merged**] to the vegetation layer [**veg_export**].

Output stored in the **/projects/quino_mscp_package/vernal_veg**

Step 4: Clip of the [**vernal_veg**] to the county boundary. Erase the loss polygons from the [**vernal_veg**] cover with a reselected cover of the [projects] database to create [modified_veg]

(AI Cover) **/projects/quino_mscp_package/habi_loss**

(AI Cover) **/projects/quino_mscp_package/modified_veg**

Step 5: Clip and Buffer - [**modified_veg**] to the MSCP boundary south [**Segments**]
{segments <> 0}

(AI Cover) **/projects/quino_mscp_package/clipped_veg**

*buffer 1km data on [**qcb_pts**] **that are 1992 or newer** to comply with the requirement of “any recent observations, not limited to 2001”. Originally, I interpreted this to mean in the last 10 years. Helix staff has since verbally accepted this in several meetings.

Output stored in (AI Cover) **/projects/quino_mscp_package/buff_1km_92**

Step 6: Union datasets – union [**clipped_veg**] to the 2001 survey layer * [**qcb_sur2001**]

Output stored in (AI Cover) **/projects/quino_mscp_package/survey_veg**

Union [survey_veg] to [buff_1km_92]

Output stored in (AI Cover) /projects/quino_mscp_package/sur_veg_1km

**It should be noted that the survey location data and date of observation cover had numerous lacunae and errors where either no information was entered or that the survey date was incorrect. This was corrected with presence and absence observation data of point locations acquired from USFWS (Tony McKinney). These data were used to verify the year of several surveys.*

Step 7: Final model stages (previous steps involved the inclusion of habitat information, these steps involved the inclusion of political information and the aggregation of the vegetation info into habitat and non-habitat)

Model Descriptions:

QCBM_1 through **QCBM_10** represent stages where additional MSCP special features were added and modified to represent current ground conditions. Additionally, areas where the 1995 vegetation map indicated unsuitable habitat incorrectly (because of changing ground conditions) were updated. This update included areas around Hollenbeck Ranch. Early QCB_models were begun with shape files, which proved to be totally unstable in ArcGIS editing environment, e.g., incorrect data calculations, missing polygons, and crashing edit sessions. QCBmod_11 represent the first model to have been check over and created in an AI cover. QCBmod_11 was also the first model to have its fields simplified and vegetation polygons were removed in this version because the information is redundant with the model classes (1 through 6) of habitat suitability.

QCBM_11 - this model was the first to have a descriptive statistics package created to be used with a MSCP inclusion package. These statistics were generated with the [Unioned] data which was export to geodatabase and analyzed in access for area proportions by MSCP class, QMU class, vegetation type, etc. This model also was the first to have the village 13,14, and 15 alternative Otay Lakes loss area [unioned] to it and have the statistics rerun for the South County Segment.

QCBM_12 – this model shows modifications made to the OSP areas that are in the MSCP boundaries but do not overlap with the PAMA or the hard-line areas of the south county segment. Additionally, this model revised the status of several MSCP special feature areas that were coded as hard-line in the original 1997 MSCP. As in the previous model this run also has the village 13,14, and 15 alternative Otay Lakes loss area [unioned] to it and have the statistics rerun for the South County Segment. Finally, this model's tabular statistics were extracted in the same manner as the previous datasets (QCBM11). The general protocol is as follows:

- 1.) The .PAT table was selected to have to model class [model_clas] of "0" and no [Quino_MHU] of "Out". This excludes the lands that do not contain habitat and are inside of the *Cornerstone Lands* areas.

- 2.) This table was then exported to an INFO table as a copy of the [.PAT]. This table is located in
[/projects/quino_mscp_package/quino_arc/q12_output/qcbmod12_out]
- 3.) The table was then run through the ArcINFO frequency function so that area could be tabulated for the QMUs by model classes (1-7). This table is located in
[/projects/quino_mscp_package/quino_arc/q12_output/qcb12_mhu_1_6.frq]
- 4.) The main INFO table was then run through the frequency function again and the MSCP categories were then tabulated by Model class (1-7) by QMU. This information was output to a table located at
[/projects/quino_mscp_package/quino_arc/q12_output/q12_mscp_1_6]
- 5.) The resulting INFO frequency table was then exported into the Geodatabase format for further analysis in MS Access. Polygons with an acreage equal or less than 2 were excluded from this table in an effort to minimize the influence of sliver polygons on the final tabulations. The GDB is located at
[/projects/quino_mscp_package/arc_map/model12.mdb] The table is called **qcb12_mscp_1_6**
- 6.) The information from the GDB is then input into a report table in the statistics package word document. This file is located at
[/projects/quino_mscp_package/quino_word/Draft Quino Checkerspot Butterfly Descriptive Statistics Package for MSCP Coverage.doc].
Available at the MSCP Portal

QCBM_13 Same as QCBM_12 Cover with the main exception that special features categories that have since been purchased as preserve were recalculated as “Gain”. Additionally Habitrak data from December 2002 (which post dates the original data by a year) was used to check the gain categories of preserve and add some recent preserve sites to the model. The preserve class of 7 was added to the model which can be defined as “OSP that is not recognized as ‘Gain’ in the MSCP which is greater than 400feet from an existing PAMA/Hardline/MHPA layer”. This change is described below (model revision step 8). Following this the tabular statistics were extracted using the methodology described in model description QCBM_12. These data were then exported to helix in be inserted in their inclusion package as the reference data.

Step 8: Model Revisions

Following a meeting that occurred on 02/28/2003 with Thomas Oberbauer and Helix Staff, a point was made that there is gain areas outside of PAMA. Both Thomas Oberbauer and Helix staff determined that these isolated gain areas (which stem from open space easements that predate the MSCP) should be reclassified when they are not directly touching or in proximity to PAMA, Hardline preserve areas, or MHPA areas. Initially an attempt was made to remove open space easements (OSP), not spatially coincident with the above areas, by hand checking the map. This was done with the Helix staff writing on the map with a red pen. It quickly became apparent that this process was inconstantly removing OSP that was both out of and inside of PAMA, and was not removing small islands that were too difficult to see on a map scale of 1:70,000. Subsequently a programmatic approach in GIS was used to remove these areas.

Revision Steps: First Iteration

- 1.) Select QCB model class less than 4 greater than 0
- 2.) Reselect from this selection areas that have coincident geometric central mass [have center in with] with the polygons of the OSP easements [/apps/regional/landuse/easements/allos96_bac] layer.
- 3.) Unselect from this set model areas that have coincident geometric central mass with the PAMA layer.
- 4.) Unselect from this set areas that have coincident geometry directly contacting the PAMA layer or are within 400 feet of intersecting the PAMA layer.
- 5.) Unselect from this set areas that have coincident geometry directly contacting the City of San Diego's MHPA layer or are within 400 feet of intersecting the MHPA layer.
- 6.) Code the remained polygons with a model class of 7 to indicate a new model class of **"OSP not recognized as viable habitat for the QCB"**. This class now can summarily be described as **"OSP that is not recognized as 'Gain' in the MSCP which is greater than 400feet from an existing PAMA/MHPA layer"**.